

REMARKS

In accordance with the foregoing, claim 9 has been amended. Claims 1-9 are pending and under consideration.

In item 3 of the Office Action, the Examiner objects to the drawings. The Examiner asserts that the drawings must show a handover code and a code word. Applicant respectfully disagrees. For the Examiner's review, enclosed is a sketch showing how the handover signaling message and handover code would appear in the drawings. The handover code and code word are part of method claims and are not physical objects. It is not believed that the handover code and the codeword are features, which must be shown in the drawings. Reconsideration of the objection is requested.

Claims 1, 2, 7 and 9 are rejected under 35 USC § 102(b) as being anticipated by U.S. Patent No. 6,122,512 to Bodin. Claims 3-6 and 8 are separately rejected as being obvious over Borden in view of U.S. Patent No. 6,647,262 to Demetrescu et al.

Before specifically addressing the prior art rejections, it is helpful to briefly review the salient points of the preferred embodiments. The following description relates to the preferred embodiments, not necessarily to the claimed invention.

As described in the specification, when a radio communications system indicates to the mobile station that it is necessary to perform a handover, the radio communications system assigns a traffic channel with a particular frequency to the mobile station. The mobile station uses this traffic channel to communicate with the new base station.

In the example described in the specification, the mobile station is communicating with the base station BTS33 (which has a broadcast radio channel frequency F3 and a base station color code m=3) using a traffic channel F1. However, this frequency F1 is the same as the broadcast radio channel used by other base stations. For example, due to the reuse of radio resources, base stations BTS12, BTS13 and BTS15 use frequency F1 as their broadcast radio channel.

In a radio network, the area is divided into cells. Each cell may be controlled by one base station, such as the case in GSM radio networks. All base stations are connected to one or more base station controllers that manage the radio resources. In order to avoid interference between radio links in adjacent cells, each cell assigned a different physical channel with a different frequency. The same physical channel is reused only when two cells are separated by a certain distance. When a mobile station moves from one cell to another cell, the radio

communications system detects this move and initiates a handover procedure so that the mobile station can switch from the base station in the original cell to a base station in the new cell. When initiating the handover process, the radio communications system transmits a message to the mobile station which commands the mobile station to carry out a handover procedure, provides information about the new base station and contains a handover procedure identifier. The radio communications system also transmits a handover procedure identifier to the new base station to alert the new base station to the imminent handover procedure. The handover procedure identifier transmitted from the radio communications system to the base station allows the base station to identify a handover signaling message, when it is received from the mobile station.

The mobile station then transmits the handover signaling message containing the handover procedure identifier to the base station. In GSM systems, the same physical channel (defined by a frequency band and a base station color code) may be used to transmit both the handover signaling message and channel request messages. In these channel request messages, mobile stations request a new radio link to be set up with the radio communications systems. Each channel request message contains an identification word with specific values regarding the connection to be made. However, in systems such as GSM systems, the format and content of both the handover procedure identifier and the identification word are the same. This leads to the problem that a base station that is not part of the handover procedure, but is using the same physical channel, will receive the handover signaling message and interpret the handover signaling message as a channel request message. This in turn causes that base station to request a radio channel from the base station controller. The base station controller sets up a new radio channel. Within three seconds of setting up the new radio channel, if the radio communications system does not detect a radio link, the radio channel is released because no mobile station has actually requested the channel.

The three-second time period prevents the radio channel from being tied up for an extended period. However, the communications between the base station and the base station controller also present a problem. Specifically, the request, assign and release procedures overload the base station controller.

Bodin discloses a method for determining the geographical location of a mobile station within a cellular mobile telecommunications system. Bodin does not disclose or suggest sending a handover signaling message that contains a code word identifying a handover procedure, the code word having a value corresponding to a handover code which is reserved for handover

procedures.

Referring again to the embodiments disclosed in the specification, the mobile station might move from cell Z03 to cell Z33, from the coverage area of base station BTS03 to the coverage area of base station BTS33. BTS33 is notified by the radio communications system that handover procedure is going to occur. The mobile station is authorized to perform a handover and is assigned to a traffic channel with a particular frequency, which traffic channel is to be used to communicate with BTS33. In the example described in the specification, frequency F1 is used as the traffic channel between the mobile station and BTS33. Frequency F1 is the broadcast frequency assigned to BTS13.

The mobile station sends a handover signaling message to BTS33. BTS13 also receives the message. In order to avoid BTS13 from interpreting the message as a channel request message, and thereby overloading the communications system, BTS13 determines whether the code word contained in the message matches a reserved code word corresponding to a handover code.

Unlike BTS33, BTS13 has not been notified by the radio communications system that a handover is to occur. When BTS13 checks the code word, BTS13 ascertains that the received message is a handover signaling message and not a channel request message. Accordingly, BTS13 does not request a new channel, and this prevents overloading the communications system. Because BTS33 has been notified that it is the target of the handover, BTS33 performs the normal handover procedure.

Brodin discloses a method for determining the geographical location of a mobile station within a cellular mobile telecommunications system. Brodin does not disclose sending a message containing a code word that identifies a handover procedure. Further, Brodin does not disclose checking the code word at one of the further transmitting/receiver units. Column 5, line 16 through column 7, line 22 of Brodin describes the procedure used in GSM handovers. This procedure would be analogous to the procedure used between the mobile station and BTS33.

Referring to Brodin Fig. 1, a mobile station contacting base station BTS2 in cell 2 might send a message, which is also received by base station BTS3 and cell 3, which communicates on the same physical channel. The invention could ensure that this message does not create confusion. Specifically, BTS3 is able to verify that the message is for a handover and not a channel request. Thus, BTS3 will not overload the system. Brodin does not make any suggestion of this feature.

Demetrescu et al. is cited only for the additional limitations of the dependent claims.

Demetrescu et al. does not compensate for the deficiencies discussed above with regard to Bodin.

In view of the foregoing, it is submitted that the prior art rejection should be withdrawn. There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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